

CLAIMS

What is claimed is:

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1. A method of connecting an access point to other network elements in a wireless telecommunication system comprising at least one access point and at least one fixed network part, comprising the steps of:

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storing data on an IC card for connecting at least one access point to a functional connection with the fixed network part,

coupling the IC card into a functional connection with the access point in response to a need to connect the access point to the fixed network part, and

connecting necessary resources of the fixed network part to a functional connection with the access point on the basis of said stored data.

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2. A method as claimed in claim 1, further comprising the steps of:

checking in the fixed network part if the IC card is entitled to use the necessary resources of the fixed network part, and

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connecting the necessary resources of the fixed network part to a functional connection with the access point in response to the IC card having the right to use the resources of the fixed network part.

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3. A method as claimed in claim 2, wherein

said data includes an address of at least one fixed network part element and a specific identity of the IC card,

the fixed network part element also comprises data on the IC card, assorted by the specific identity, the method further comprising the steps of:

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transmitting a request for connecting the access point to the network element of the fixed network part on the basis of the stored address, and
checking the rights of the IC card by checking the data on the IC card on the basis of the specific identity and by authenticating the IC card.

4. A method as claimed in claim 1, wherein

5 said data includes at least one key and algorithm required for authenticating the IC card, the method further comprising the steps of:

transmitting an authentication response, calculated by means of at least one key and algorithm, to the fixed network part,

10 authenticating the IC card by checking the transmitted authentication response in the fixed network part, and

connecting the access point to a functional connection with the resources of the fixed network part in response to the authentication response being acceptable.

5. A method as claimed in claim 1, wherein

15 said data includes at least one key and algorithm for ciphering the connection between the access point and the fixed network part, and the method further includes the step of

ciphering the traffic between the access point and the fixed network part by utilizing at least one key and algorithm.

20 6. A method as claimed in claim 1, wherein

the fixed network part comprises at least one radio network controller, an access point server, and an access point register server in a functional connection thereto and includes stored data relating to the IC card, such as a specific identity of the IC card, the method further comprising the steps of:

25 transmitting the specific identity of the IC card to the access point register server,

checking a right of the IC card to use the resources of the fixed network part,

30 selecting an access point server for the access point in response to the IC card having the right to use the resources of the fixed network part,

transmitting data on the selected access point server to the access point and data on the access point to be connected to the access point server,

transmitting from the access point to the access point server a request for selecting a radio network controller,

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5 selecting a radio network controller for the access point, and
connecting the access point to a functional connection with the radio network
controller and other optionally required resources.

7. A method as claimed in claim 6, further comprising the steps of:
calculating at least one cipher key and authentication response in the IC card
10 and in the access point register server,

transmitting the authentication response calculated in the IC card to the ac-
cess point register server,

15 authenticating the IC card by checking if the transmitted authentication re-
sponse corresponds to the authentication response calculated in the access point register
server, and

connecting, in response to an acceptable authentication, the access point to a
functional connection with the radio network controller in such a manner that the traffic
between the access point and the radio network controller is ciphered by the calculated
cipher keys.

20 8. A method as claimed claim 1, wherein
the IC card comprises a security function for checking a user of the IC card,
and wherein

25 other data, in addition to said data related to the use of the access points, is
stored on the IC card, such as data required in the UMTS system USIM application.

9. A method as claimed in claim 1, wherein
the access point is a base station in a UMTS system, and the fixed network
part comprises at least a UMTS system radio network controller RNC.

30 10. A method as claimed in claim 1, wherein
the access point is a UMTS system radio network controller RNC and the
fixed network part comprises one or more network elements of a core network of a UMTS
system.

5 11. A wireless telecommunication system comprising at least one access point and at least one fixed network part, wherein

the access point is arranged to use an IC card, onto which is stored data for connecting at least one access point to a functional connection with the fixed network part, and

10 the access point and the fixed network part are arranged to connect necessary resources of the fixed network part to a functional connection with the access point on the basis of said stored data.

12. A wireless telecommunication system as claimed in claim 11, wherein the fixed network part is arranged to check if the IC card is entitled to use the
15 necessary resources of the fixed network part, and

the access point and the fixed network part are arranged to connect the access point and necessary resources of the fixed network part to a functional connection in response to the IC card being entitled to use the necessary resources of the fixed network part.
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13. A wireless telecommunication system as claimed in claim 12, wherein: said data comprises an address of at least one fixed network part element and a specific identity of the IC card,

25 the fixed network part element also comprises data on the IC card, assorted by the specific identity,

the access point is arranged to transmit a request for connecting the access point to the network element of the fixed network part on the basis of the stored address, and

30 the network element of the fixed network part is arranged to check rights of the IC card by checking the data on the IC card on the basis of the specific identity and by authenticating the IC card.

14. A wireless telecommunication system as claimed in claim 11, wherein:

5 the fixed network part comprises at least one radio network controller, an access point server, and an access point register server in a functional connection thereto and includes stored data on the IC card, such as a specific identity of the IC card,

the access point is arranged to transmit the specific identity of the IC card to the access point register server,

10 the access point register server is arranged to check a right of the IC card to use the necessary resources of the fixed network part,

the access point register server is arranged to select an access point server for the access point in response to the IC card being entitled to use the necessary resources of the fixed network part,

15 the access point register server is arranged to transmit data on the selected access point server to the access point and data on the access point to be connected to the access point server,

the access point is arranged to transmit to the access point server a request for selecting a radio network controller,

20 the access point server is arranged to select a radio network controller for the access point, and

the access point and the fixed network part are arranged to connect the access point to a functional connection with the radio network controller and other optionally required resources.

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15. A wireless telecommunication system as claimed in claim 14, wherein

the IC card and the access point register server are arranged to calculate at least one cipher key and authentication response,

30 the access point is arranged to transmit the authentication response calculated in the IC card to the access point register server,

the access point register server is arranged to authenticate the IC card by checking if the transmitted authentication response corresponds to the authentication response calculated in the access point register server, and

the access point and the fixed network part are arranged to connect, in re-

5 sponse to an acceptable authentication, the access point to a functional connection with the
radio network controller in such a manner that traffic between the access point and the
radio network controller is ciphered by the calculated cipher keys.

10 16. An access point in a wireless telecommunication system, wherein
the access point comprises card means for coupling an IC card to the access
point and for reading data on the IC card, and
the access point comprises control means and transceiver means for setting
up a functional connection to required resources of a fixed network part on the basis of the
data stored on the IC card.

15 17. An access point in a wireless telecommunication system as claimed in
claim 16, wherein
said data comprises an address of at least one fixed network part element and
a specific identity of the IC card,
the control means are arranged to send a request including a specific identity
20 of the IC card for connecting the access point to a network element of the fixed network
part on the basis of the stored address, and
the control means are arranged to set up a functional connection to at least
one network element of the fixed network part in response to an accepted request for con-
necting the access point.

25 18. An access point in a wireless telecommunication system as claimed in
claim 16, wherein
the control means are arranged to transmit a request to the IC card for cal-
culating an authentication response and at least one ciphering key,
30 the control means are arranged to transmit the authentication response cal-
culated on the IC card to the fixed network part, and
the transceiver means are arranged to cipher the data to be sent to the fixed
network part and to decrypt the data received from the fixed network part by means of at
least one ciphering key calculated on the IC card.

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19. An access point as claimed in claim 16, wherein the access point is a base station in the wireless telecommunication system.

20. An access point as claimed in claim 16, wherein the access point is a radio network controller controlling one or more base stations in the wireless telecommunication system, and the fixed network part comprises one or more wireless network elements of a core network of the telecommunication system.

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